PRACTICE PAPER

ICSE CLASS 10 – MATHEMATICS

Chapter 14 : Equation of a Line

(Coordinate Geometry : Slope, Parallel and Perpendicular Lines, Equation of a Straight Line)

Maximum Marks: 40 Time allowed: One and a half hours

1. *Answers to this Paper must be written on the paper provided separately.*
2. *You will not be allowed to write during the first 10 minutes. This time is to be spent in reading the question paper.*
3. ***The time given at the head of this Paper is the time allowed for writing the answers.***
4. *Attempt **all** questions from **Section A** and **any two** questions from **Section B**.*
5. ***All working, including rough work, must be clearly shown, and must be done on the same sheet as the rest of the answer.***
6. ***Omission of essential working will result in loss of marks.***
7. *The intended marks for questions or parts of questions are given in brackets [ ].*
8. *Notation: m = slope (gradient) of a line, θ = inclination of a line (angle made with the positive direction of the x-axis).*

Question 1

Choose the correct answers to the questions from the given options. [8]

(Do not copy the question, write the correct answers only.)

(i) The slope of the line passing through (−2, 3) and (4, −9) is:

(a) 2
(b) −2
(c) 1/2
(d) −1/2

(ii) The equation of the line with slope 3 and y-intercept −4 is:

(a) $y = 3x + 4$
(b) $y = -3x - 4$
(c) $y = 3x - 4$
(d) $y = 4x - 3$

(iii) The slope of the line $4x - 6y + 5 = 0$ is:

(a) 2/3
(b) −2/3
(c) 3/2
(d) −3/2

(iv) The lines $kx + 3y = 7$ and $3x - 2y = 5$ are perpendicular to each other. The value of k is:

(a) −2
(b) 2
(c) 9/2
(d) −9/2

(v) The x-intercept of the line $3x - 2y + 12 = 0$ is:

(a) -6
(b) 6
(c) 4
(d) -4

(vi) The equation of the line parallel to the x-axis and passing through $(-3, 5)$ is:

(a) $x = -3$
(b) $y = -3$
(c) $y = 5$
(d) $x = 5$

(vii) **Assertion (A):** The lines $3x + 4y = 7$ and $4x - 3y = 2$ are perpendicular to each other.

Reason (R): Two lines are perpendicular if the product of their slopes is 1.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation for (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation for (A).

(viii) **Assertion (A):** The point (2, 3) lies on the line $3x - 2y = 0$.

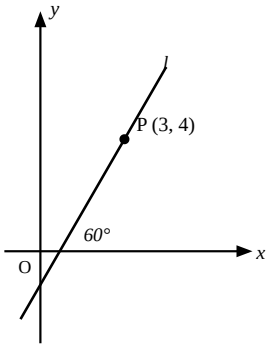
Reason (R): A point lies on a line if its co-ordinates satisfy the equation of the line.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation for (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation for (A).

Question 2

(i) Find the equation of the line passing through the points A(−2, 3) and B(4, −1). Write the equation in the form $ax + by = c$. [4]

(ii) The figure shows a line l passing through P(3, 4) and making an angle of 60° with the positive direction of the x-axis. Find the slope of l, the equation of l, and the slope of a line perpendicular to l. [4]



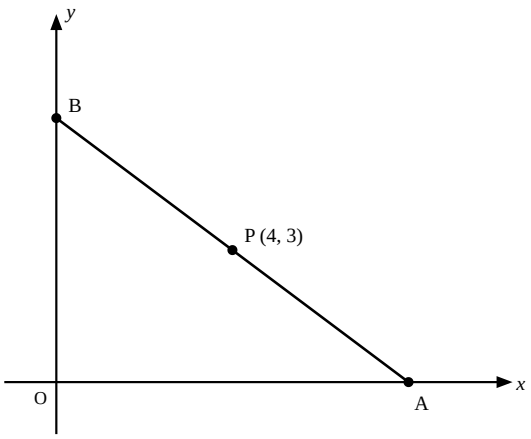
(iii) The points A(−1, 2), B(2, 5) and C(4, k) are collinear. Find the value of k. Hence find the equation of the line on which they lie. [4]

SECTION B (20 Marks)

*(Attempt **any two** questions from this Section.)*

Question 3

In the figure, the line AB meets the x-axis at A and the y-axis at B. The point P(4, 3) is the mid-point of AB.



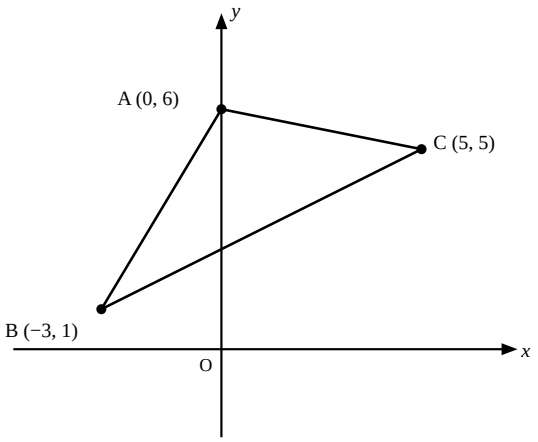
(i) Find the co-ordinates of A and B. [3]

(ii) Find the slope of AB and the equation of the line AB. [3]

(iii) Find the equation of the perpendicular bisector of AB. Also find the length of AB. [4]

Question 4

The figure shows a triangle ABC with vertices A(0, 6), B(−3, 1) and C(5, 5).



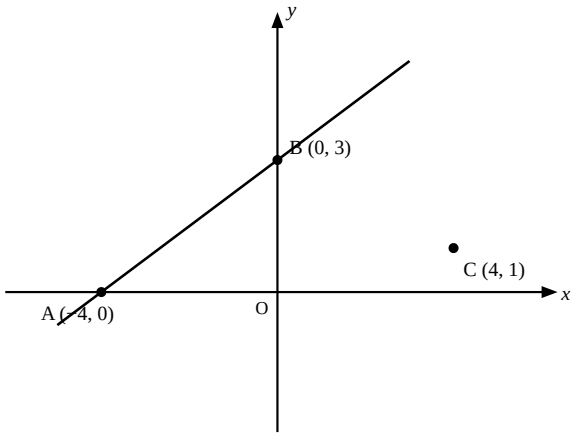
(i) Find the equation of the side BC. [3]

(ii) Find the equation of the altitude (the perpendicular) from A to BC. [3]

(iii) Find the equation of the median through A. Also write down the slope of a line through B parallel to AC. [4]

Question 5

In the figure, the line AB cuts the axes at A(−4, 0) and B(0, 3). C is the point (4, 1).



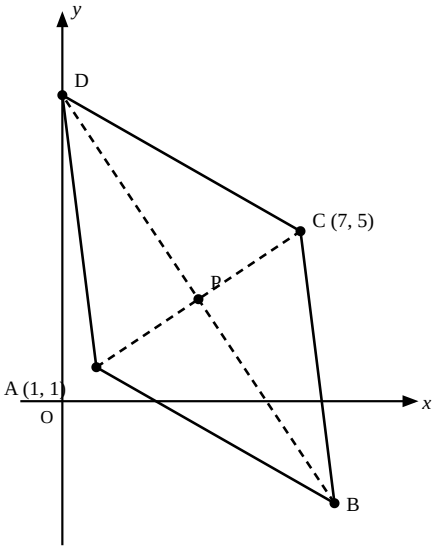
(i) Find the slope of AB and its equation. [3]

(ii) Find the equation of the line through C parallel to AB. [3]

(iii) The line AB is perpendicular to the line $(k + 1)x + 3y = 8$ and parallel to the line $6x - (m - 2)y = 5$. Find the values of k and m. [4]

Question 6

In the figure, ABCD is a rhombus with A(1, 1) and C(7, 5). The diagonals AC and BD meet at P and the vertex D lies on the y-axis.



(i) Find the co-ordinates of P and the slopes of AC and BD. [3]

(ii) Find the equation of the diagonal BD. [3]

(iii) Find the co-ordinates of D and B. Hence find the area of the rhombus. [4]

— End of Question Paper —